2N EasyRoute

2N TELEKOMUNIKACE

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Dear customer,

Let us congratulate you on having purchased the EasyRoute system. This new product has been developed and manufactured to provide the maximum utility value, quality and reliability. We hope you will be fully satisfied with this GSM/UMTS gateway for a long time. Therefore, use your EasyRoute for purposes it has been designed and manufactured for, in accordance herewith.

The manufacturer reserves the right to modify the product in order to improve its qualities.

Safety Precautions

Do not switch on EasyRoute in the vicinity of medical apparatuses to avoid interference. The minimum distance of the antenna and pacemakers should be 0.5m.

Do not switch on EasyRoute aboard of a plane.

Do not switch on EasyRoute near petrol stations, chemical facilities or sites where explosives are used.

Any mobile telephone use prohibition based on RF energy radiation applies to EasyRoute too.

EasyRoute may disturb the function of TV sets, radio sets and PCs.

Warning! EasyRoute contains components that can be swallowed by small children (SIM card, antenna, etc.).

The voltage value mentioned on the adapter may not be exceeded. If you connect EasyRoute to another power supply, make sure that the voltage value is in the acceptable range.

When your EasyRoute comes to the end of its operational life, dispose of it in accordance with applicable regulations.

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1 EasyRoute purpose

1.1 Basic functions

- Easy route provides circuit switched telephone network interface (FXO), Fast Ethernet switch and WiFi network support.
- Instant broadband internet connection for multiple users via Fast Ethernet switch or EasyRoute's WiFi network.

1.2 Advantages of EasyRoute use

- **Fast Data connection** – EasyRoute transmits data using the high speed HSDPA connection (max 7,2Mbit/s)
- **Call cost cutting** – by forwarding GSM calls to EasyRoute you save a lot on PSTN – GSM calls.
- **Easy installation** – EasyRoute is designed for immediate use without programming.
- **You get all you need in the delivery –** your EasyRoute delivery contains all you need to operate the system (power supply adapter, telephone cable, Ethernet cable, antenna, manual on CD).
- **Solution for sites without telephone lines** – such as mountain chalets, exhibitions, conferences, etc
- **CLIP** - EasyRoute equipped with the FSK-based CLIP feature, so if a terminal capable of receiving the CLIP is used you know the caller‘s number.
- **Radiation hazard minimization** – you are not exposed to a direct effect of the antenna RF electromagnetic field while telephoning as opposed to mobile telephones.
- **Full GSM coverage** - EasyRoute is available in quadband version (850, 900, 1800, 1900MHz).and supports UMTS 2100 and 850, 1900 MHz.
- **Fast Ethernet switch –** EasyRoute provides 4-ports Fast Ethernet switch so you can connect all needed devices (another extension of Ethernet ports is possible by connecting external switch).
- **WiFi –** You can connect PC and other devices using WiFi 2,4GHz or 5GHz interface. Standards 802.11a/b/g are supported.

1.3 System components and 2N related accessory

An EasyRoute delivery contains the following items:

Item	Number of pieces
EasyRoute	1
Supply Adapter	1
Telephone Cable	1
Network Cable (Fast Ethernet RJ45)	1
Antena GSM+UMTS	1
CD (manual etc.)	1

1.4 User manual versions

Version	Amendments to Earlier Versions
1.00	The User Manual applies to EasyRoute FW Version 1.00

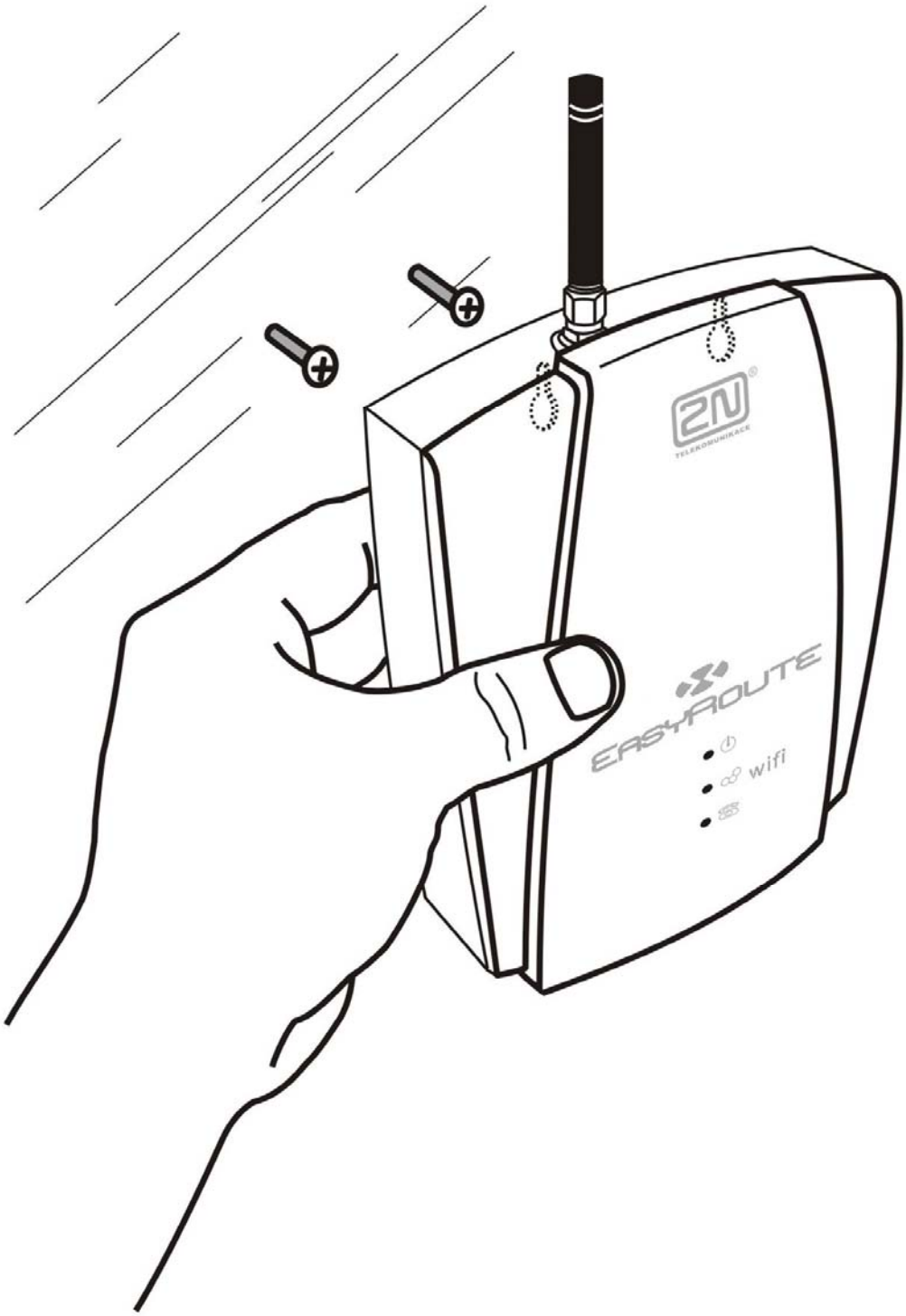
1.5 Upgrade

The manufacturer continuously meets customer requirements by improving the firmware. For the latest EasyRoute processor firmware and User Manual see www.2n.cz. For a detailed description of the EasyRoute firmware upgrade refer to the section devoted to the EasyRoute's options setting.

2 Installation

2.1 Proper location

- EasyRoute is designed for vertical mounting on suspension holes (use the mounting pattern). This position is the best for signal reception because a vertical antenna is used. EasyRoute can be operated in the horizontal position too where the GSM signal is good.
- Install EasyRoute with respect to the GSM signal strength – check the signal strength using the EasyRoute's web interface.
- Place EasyRoute out of range of sensitive devices and human bodies for electromagnetic interference reasons.
- For the allowed range of operating temperatures refer to the "*Technical Parameters".*
- It is impossible to operate EasyRoute on sites exposed to direct solar radiation or near heat sources.
- EasyRoute is designed for indoor use. It may not be exposed to rain, flowing water, condensed moisture, fog, etc.
- EasyRoute may not be exposed to aggressive gas, acid vapours, solvents, etc.
- EasyRoute is not designed for environments with high vibrations such as means of transport, machine rooms, etc.



2.2 External Antenna Connection

Screw the antenna enclosed into the SMA antenna connector. Tighten the antenna connector gently with your hand - never use wrenches!

The antenna enclosed has a sufficient gain for trouble-free operation in normal conditions. If the GSM signal is poor or you want to place your antenna separately from

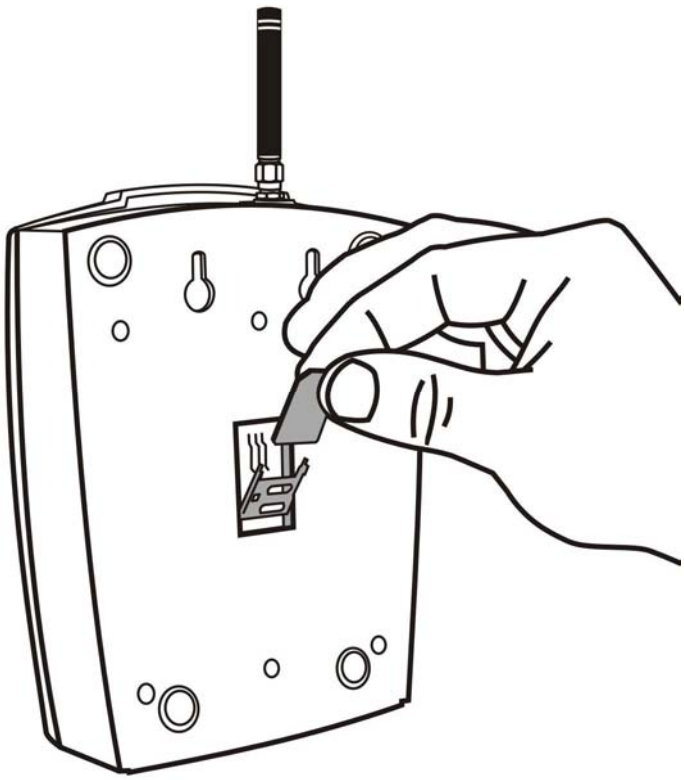
EasyRoute, you can use an antenna with an SMA-connector terminated cable (not included). The antenna should be mounted vertically.

The Antenna shall be located within the same building as the main equipment.

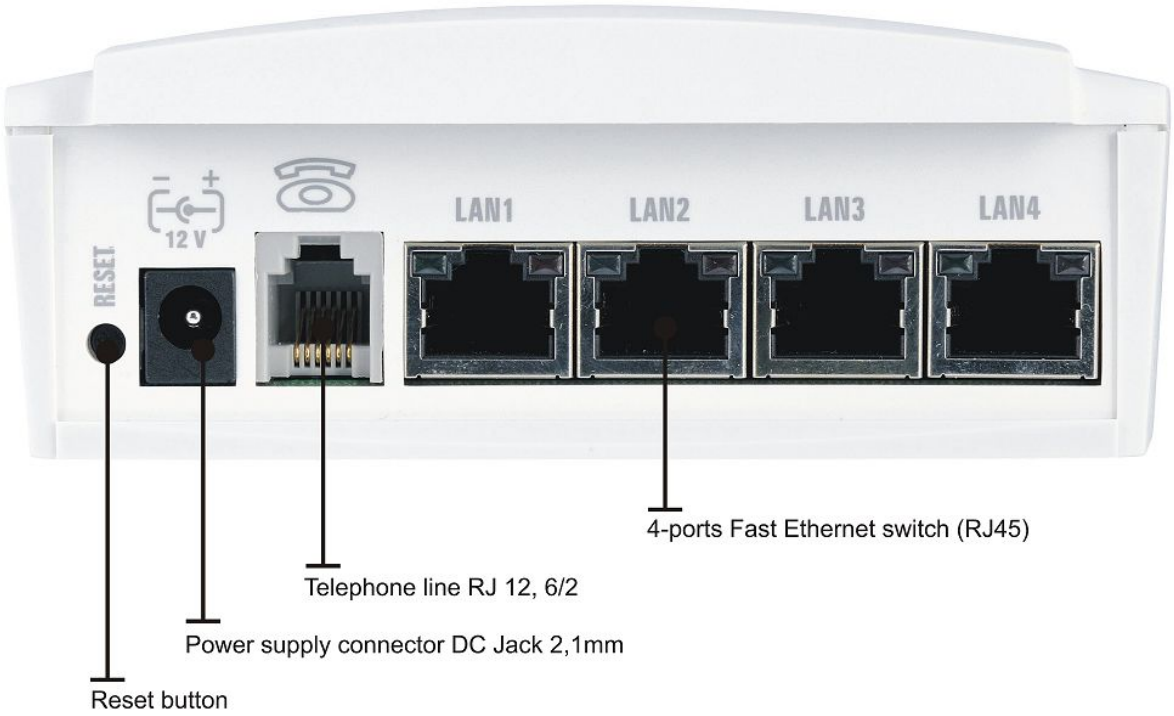
2.3 SIM Card Installation

Make sure that the GSM provider's SIM card is compatible with the GSM network supported by your EasyRoute version.

Open the SIM card holder on EasyRoute's backside, insert the SIM card and close it. Select the required GSM provider and SIM card services, such as call forwarding, call barring, preferred networks; SMS service centre, etc. in your mobile phone before inserting your SIM card in EasyRoute.



2.4 Connector description



2.5 Reset button

Reset button takes place to the left of the power supply plug of EasyRoute. When pressed for short period of time it restarts the EasyRoute (power ON and OFF), when held down for longer time (minimum 10s) all EasyRoute settings are reset and set to default settings (defined from producer).

2.6 Telephone line connection

2.6.1 PBX Connection

Connect EasyRoute to a free CO line of your PBX. Configure your PBX in such a manner that GSM outgoing calls are routed to EasyRoute.

EasyRoute is equipped with the FSK-based CLIP function. If your PBX is able to process the caller's ID, you are advised to enable this function.

2.6.2 Telephone Set (Answering Machine, Coin Telephone Station) Connection

You can connect a standard telephone, answering machine or any other FXO-interface terminal to EasyRoute.

EasyRoute is equipped wit the FSK-based CLIP and so it is advantageous to connect a terminal that is able to display the CLIP.

2.7 Power Supply Connection

EasyRoute is fed with 10-16V DC. Where another source than the included power supply adapter is used, the voltage range and polarity shown on the EasyRoute power supply connector have to be maintained.

Do not activate the power supply until the antenna is connected to EasyRoute to avoid the GSM/UMTS module damage.

2.8 PC Connection

You received Fast Ethernet cable for PC connection. To enter web browser programming interface type 192.168.1.1 in web browser's address field after connecting EasyRoute. Initial username is set to "admin" and initial password is set to "admin".

3 EasyRoute parameters configuration

EasyRoute is confugured via user friendly network web interface. Connect EasyRoute to PC using Ethernet cable and in Your web browser open the page 192.168.1.1. You enter the EasyRoute web interface, where You can change EasyRoute's settings. The initial username is "admin" and initial password is "admin" (it is recommended to change this setting when first started EasyRoute's web interface).

3.1 EasyRoute Status Indication by LED diodes

EasyRoute's status is indicated by LED diodes on its front side. All possible states are described in the following table.

Name	Meaning
Power Supply	• Light = EasyRoute is powered. • No light = Power supply is not connected
GSM / WiFi network	• Yellow LED indicates GSM network status, Green is for WiFi network, each led flashes for certain amount of time. Short flash = the network is active, 1s flash (maximum) indicates max. data traffic in GSM or WiFi network. (the longer the flash is, the higher data traffic in network)
Telephone line	• No light = standby • Flashes quickly = seized line or ringing • Light = call

3.2 Parameter tables

All programmable parameters are listed in this section. Each parameter is accompanied with the unit used, description of EasyRoute's behaviour, setting options, setting step and default (initialization) value

Status

Signal /Signál

Shows the strength of receiving signal in [dBm].

Operator /Operátor

Shows the operator's name.

Connection type /Typ připojení

Shows the connection type (GSM, EDGE, UMTS, etc.)

PPP-Status

Shows the connection status (Disconnected – internet connection is not established, Connected – internet connection is established, Disconnecting – EasyRoute is disconnecting from internet service, Connecting – EasyRoute is establishing internet connection)

Wireless-Status

Shows the WiFi network status (disabled/ Enabled)

RX/TX bytes/packets (PPP, Wireless, LAN)

Shows the number of sent and received bytes or packets from/to mobile network (PPP connection) and number of sent and received bytes or packets on Ethernet and WiFi interface.

Refresh

This button is used for refreshing of the displayed information.

Connect/ Disconnect

This button is used for connecting/disconnecting the gateway to the internet network.

Maintenance

The button Maintenance deletes the thrown SMS from EasyRoute's memory. If the SMS memory is full, the new SMS messages are stored on EasyRoute's SIM card. When the EasyRoute's SIM card is full, no new SMS messages are received until old messages are deleted. In database information there is count of SMS messages, count of deleted SMS messages and full pard of EasyRoute's memory in %.

Logout

It is used for exiting the EasyRoute's web interface.

3.2.1 SMS

Inbox

Shows the incoming messages. SMS can be viewed and marked messages can be deleted using Delete button

Outbox

Shows the outgoing messages. SMS can be viewed and marked messages can be deleted using Delete button

To Send

The queue of SMSs that will be sent.

Trash

Shows the deleted messages. SMS can be viewed and marked messages can be deleted from SIM card using Delete button

Error

SMS messages which sending failed.

Create

Phone number

Telephone number the SMS is sending on.

Setting options: 0-15 characters (0-9,*,#,+)

Default setting: none

Text

SMS message text

Send

Button for sending the SMS

3.2.2 Setup

3.2.2.1 Cellular

SIM

IMSI

IMSI (International mobile subscriber identity – SIM unique worldwide identifier) of inserted SIM card.

Type

Type of inserted SIM card (SIM, USIM, unknown – EasyRoute can't identify inserted SIM card)

Status

Status of inserted SIM card

- Busy - data are read from SIM card
- Fail – inserted SIM card is damaged or is inserted wrong
- PIN required –inserted SIM is protected by PIN code, enter the PIN code
- Ready – inserted SIM is ready to use

PIN

Fill in the inserted SIM card's PIN.

Setting options: 0, 4-8 characters (0-9)

Default setting: none

Hide

The PIN will not be shown as a text

Setting options ON/OFF

Remember

EasyRoute saved in memory the PIN and fill it in automatically next start. If the inserted PIN is wrong, it will not be remembered. If the SIM card in EasyRoute is changed and the old PIN is remembered in EasyRoute, EasyRoute tries to insert the PIN and one PIN entering option is exhausted. When EasyRoute noticed the remembered PIN is wrong it deletes it from its memory. To avoid this You can fill in the new PIN using EasyRoute web interface before SIM card change.

Setting options ON/OFF

Submit

Button for confirmation of changes. If the PIN is filled correctly, EasyRoute login to the network.

PPP

Mode

Determine the way of connecting the user to the internet.

Setting options: Manually – EasyRoute connects to Internet after pressing button Connect in menu Status
On demand – inactive
Automatically – EasyRoute connects to internet network automatically when powered up.

Default setting: Manually

APN

APN of the operator.

Dial

Telephone number for requested service. This parameter is determined by operator.

Setting options: 0-15 characters (0-9,*,#,+)
Default setting: none

Voices

Noise Suppression

Parameter for noise reduction.

Setting options: ON/OFF
Default setting: ON

Echo cancellation mode

Parameter for echo cancellation.

Setting options OFF/Handset(ESEC)/Headset/Car kit(AEC) (for use in loud environment/Speaker
Default setting Handset(ESEC)

RX AVC

Parameter for automatic setting of receiving signal volume.

Setting options ON/OFF
Default setting: ON

RX AGC

Parameter for automatic setting of receiving signal gain.

Setting options ON/OFF
Default setting: ON

TX AGC

Parameter for automatic setting of transmitting signal gain.

Setting options ON/OFF
Default setting: ON

Volumes

The setting of receiving signal and sidetone volume.

Setting options: 0-7 (0 – muted, 7 – max.)

Default setting: 3

Default

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Services

Enable GSM character set

Enables GSM character set coding scheme for GSM messages.

Setting options: ON/OFF

Enable UCS2 character set

Enables UCS2(unicode) coding scheme for GSM messages.

Setting options: ON/OFF

Enable multipart SMS

Enables long SMS (longer than 160 characters).

Setting options: ON/OFF

Max. SMS database size (in kB)

Maximum size of SMS database. When EasyRoute's database and inserted SIM card are full no new SMS messages are received.

Setting options: 8-512kB

3.2.2.2 Telephony

Dialling

Time to dial

Timeout during which EasyRoute waits for further digits to be dialled. It starts to establish connection when this timeout passes.

Setting options 500-10000ms

Setting step 1ms

Default setting 5000ms

Tone after disconnection

Tone after disconnection settings

Setting options Busy tone/ continuous tone

Default setting Busy tone

Dial pulse width

The width of pulse, that is interpreted as one dial pulse, in [ms].

Setting options 10-90ms

Default setting 30-60ms

Pause between pulse

Time period that is interpreted as pause between pulses, in [ms]

Minimal pause between digits

Minimal time between two dial numbers

Setting options:	10-90ms
Default setting:	30-60ms

Minimal On Hook

The minimum line current discontinuation that EasyRoute evaluates as hang-up.

Setting options:	100-1500ms
Setting step:	100ms
Default setting:	500ms

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Baby Call

Enable

Enables Baby Call function.

Setting options	ON/OFF
Default setting:	OFF

Number

A number to be dialled for the automatic call function.

Setting options:	0-15 characters (0-9,*,#,+)
Default setting:	none

Timeout

Time between line Off-Hook and automatic call beginning (if enabled). During this timeout EasyRoute waits for dialling that cancels the automatic call. You can make standard call if the Baby Call function is enabled.

Setting options:	500-10000 s
Setting step:	1ms
Default setting:	5000ms

Default

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Tones

Dial tone Frequency

The frequency of dialing tone in [Hz]. It is possible to set up two frequencies for dual tone.

Setting options:	100-3500Hz
Setting step:	5Hz
Default setting:	425Hz the first tone, the second tone is disabled

Dial tone Cadence

Dial tone cadence setting.

Setting options:	continuous, 320/320/640/640 (Morse A)
Default setting:	continuous

Busy tone Frequency

The frequency of busy tone in [Hz]. It is possible to set up two frequencies for dual tone.

Setting options:	100-3500Hz
Setting step:	5Hz
Default setting:	425Hz the first tone, the second tone is disabled.

Busy tone Cadence

Busy tone cadence setting.

Setting options:	250/250, 330/330, 200/200, 375/375, 500/500
Default setting:	330/330

Continuous tone Frequency

Continuous tone frequency setting in [Hz]. It is possible to set up two frequencies for dual tone. Continuous tone can be used as parameter for tone after disconnection setting.

Setting options:	100-3500Hz
Setting step:	5Hz
Default setting:	425Hz the first tone, the second tone is disabled.

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Ring & Clip

Frequency

Ringing signal frequency setting.

Setting options:	10-60 Hz
Setting step	1
Default setting:	50 Hz

Cadence

Ringing signal cadence setting

Setting options:	1000/4000, 400/200/4000/2000, 1500/3500, 2000/4000
Default setting:	1000/4000

CLIP

Set this item to enable/disable identification of a telephone line calling from a GSM network. The function can be enabled if you have a device on your telephone line that is capable of receiving FSK according to ETSI standards.

Setting options:	Disable - EasyRoute does not transmit the CLI. FSK during ringing - EasyRoute transmits the FSK-based CLI according to the ETSI EN 300 659 standard (transmission during ringing).
Default setting:	ETSI FSK During ringing

Replace '+' by

If this parameter is filled, the + character in the international prefix of CLI is replaced by the defined string. The + character can neither be transmitted by the FSK protocol nor dialled by the DTMF from a terminal.

Setting options:	0-15 characters (0-9,*,#)
Default setting:	none

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

SLIC

Receive Path High Pass Filter

High Path filter for receiving path

Setting options	ON/OFF
Default setting:	OFF

Transmit Path High Pass Filter

High Path filter for transmitting path

Setting options	ON/OFF
Default setting:	OFF

Receive Path Gain

Receive path gain setting.

Setting options:	0dB +3,5dB -3,5dB muted
Default setting:	0

Line Capacitance Compensation

Line capacitance compensation setting.

Setting options:	OFF 4,7nF 10nF
Default setting:	OFF

Two-Wire Impedance Synthesis

Telephone line interface FXS adjustment.

Setting options:	600ohm
	900ohm
	600ohm + 2.16uF
	900ohm + 2.16uF
	270ohm + 750ohm || 150nF
	220ohm + 820ohm || 120nF
	220ohm + 820ohm || 115nF
	370ohm + 620ohm || 310nF
	disabled
Default setting:	600ohm

Pulse Metering Hybrid Adjustment

Setting options :	+4,08dB
	+2,50dB
	+1,16dB
	0dB
	-1,02dB
	-1,94dB
	-2,77dB
	off
Default setting:	0dB

Audio Hybrid Adjustment

Setting options:	+4,08dB
	+2,50dB
	+1,16dB
	0dB
	-1,02dB
	-1,94dB
	-2,77dB
	off
Default setting:	0dB

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Signalling

Tariff pulse frequency

Tariff pulse frequency setting.

Setting options:	12/16kHz
Default setting:	12kHz

Tariff pulse when call starts

Signalling of call start by tariff pulse.

Setting options: ON/OFF

Default setting: OFF

Tariff pulse when call ends

Signalling of call end by tariff pulse.

Setting options: ON/OFF

Default setting: OFF

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Routing

Prefix

A prefix identifying the call type (GSM, trunk call, free call, etc.). "Other numbers" line is used for calls with prefixes that are not included in the table.

Setting options: 0-14 characters (0-9,*,#)

Default setting: None

Enable

This parameter allows/disables calls with prefixes included on the same line.

Setting options: ON/OFF

Default setting OFF

Length

The parameter defines the expected length of a number with a prefix included on the same line. This enables to start dialling into a GSM network immediately after the last digit is dialled. If the telephone number to be dialled is shorter, a timeout is respected. The "0" setting means that the function is disabled.

Setting options: 0, 3-15

Setting step: 1

Default setting: 0

#

This parameter enables to establish the call when a # is received. The # character is removed from the dialled number. If a # should be part of the dialled number, this function cannot be used for the given prefix.

Setting options: ON/OFF

Default setting: OFF

Remove

The Remove parameter is used for automatic call routing. A defined count of digits (prefix) is removed from the number beginning.

Setting options: 0-20

Setting step: 1

Default setting: 0

Add

The Add parameter is used for automatic call routing. A defined string (prefix) is added to the beginning of the number to be dialled

Setting options: 0-8 characters (0-9,*,#,+)
Default setting: None

Extr

Pseudo tariff metering setting (tariff is based on call duration). The Extra tariff parameter defines transmitting of fixed quantity of tariff pulses after call start. This parameter sets minimal call cost.

Setting options: 0-255
Setting step: 1
Default setting: 0

Tariff

Pseudo tariff metering setting (tariff is based on call duration). The Tariff parameter sets the call cost according to call duration. Set how often in seconds do you want to transmit pulses. Smaller number means more expansive call. 0 means not to transmit pulses according to call duration.

Setting options: 0-255s
Setting step: 1 s
Default setting: 0 s

Enables

Enables routing table

Setting option: ON/OFF
Default setting: OFF

Save

Button for saving the new settings.

3.2.2.3 Wireless

Basic

Enable

Activates/ Deactivates WiFi network

Setting option: ON/OFF
Default setting: OFF

SSID

SSID (Service Set Identifier) of WiFi network. It is string of maximum 32 characters that represent unique identification of the network.

Setting options: 1-32 characters
Default setting: EasyRoute

Channel

Used channel in WiFi bandwidth (2,4/ 5GHz).

Setting options: auto, accessible channels
Default setting: auto

Rate

WiFi connection speed in MB/s.

Setting options:	auto,1-54MB/s
Default setting:	auto

TX power

WiFi transmitter power setting.

Setting options:	1-19dBm
Setting step:	1dBm
Default setting:	5dBm

Beacon

Setting options:	15-65535
Setting step:	1
Default setting:	2346

RTS

Setting options:	0-2346
Setting step::	1
Default setting:	2346

Frag

Setting options	0-2346
Setting step:	1
Default setting:	2346

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

Security

System

Security system of the EasyRoute WiFi network.

Setting options:	None
	WEP
	WPA
	WPA2
	WPA+WPA2
Default setting:	None

Key format

The key format of WiFi network.

Setting options:	ASCII/HEX
Default setting:	ASCII

Key

The security key in WiFi network contains characters or hexadecimals values (It depends on Key format setting).

Setting options:

Depending on Security – System setting You can fill:

For WEB key: Fill 10 or 26 hexadecimal values or 5 or 10 alphanumeric characters.

For WPA/WPA2 key: Fill 64 hexadecimal values or at least 8 alphanumeric characters.

Default setting: empty

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

3.2.2.4 Network

LAN

IP

IP address assigned to EasyRoute.

Setting options: valid IP address

Default setting: 192.168.1.1

Subnet

Network mask of network connected to EasyRoute

Setting options: valid network mask, depend on IP address

Default setting: 255.255.255.0

Use custom DNS

Enable to use own DNS server, not the one assigned by mobile operator.

Setting options: ON/OFF

Default setting: OFF

Custom DNS1

Own the first DNS server IP address.

Setting options: valid DNS server IP address

Default setting: empty

Custom DNS2

Own the second DNS server IP address.

Setting options: valid DNS server IP address

Default setting: empty

Save

Button for saving the new settings.

DHCP

Enable

Enable/Disable DHCP setting.

Setting options: ON/OFF
Default setting: ON

Start IP

The first address in block of addresses DHCP server can assigned to network devices.

Setting options: valid IP address
Default setting: 192.168.1.100

End IP

The last address in block of addresses DHCP server can assigned to network devices.

Setting options: valid IP address
Default setting: 192.168.1.200

DNS1/DNS2

Shows the actual DNS server IP address.

WINS

WINS (Windows internet name server) IP address

Setting options: valid IP address
Default setting: empty

Lease time

This parameter determines the time during the IP address assigned by DHCP server is valid. After this time network device has to send new request about IP address..

Setting options: 3600-352800ms
Setting step 1ms
Default setting: 86400ms

Max. leases

Maximum number of IP address lent by DHCP server to network devices (it determines maximum network devices with dynamically assigned network address).

Setting options: 1-250
Setting step: 1
Default setting: 50

Defaults

Button for renewing the default values (defined from producer).

Save

Button for saving the new settings.

DNS

Enable

Enable EasyRoute's DNS server.

Setting options: ON/OFF
Default setting: ON

DNS1/DNS2

Shows DNS servers of mobile operator, where EasyRoute's DNS server send its requests.

Enable Cache

Enables EasyRoute's cache memory for DNS entries.

Setting options: ON/OFF
Default setting: ON

Cache Low

Minimum number of DNS entries in cache memory.

Setting options: 10 - 10000
Setting step: 1
Default setting: 100

Cache High

Maximum number of DNS entries in cache memory. When this limit is reached, entries are deleted to minimum number of entries provided by parameter Cache Low.

Setting options: 10 - 10000
Setting step: 1
Default setting: 300

Maximum sockets

Maximum number of requests DNS server can handle simultaneosly.

Setting options: 1-250
Setting step: 1
Default setting: 20

Timeout

Time limit for DNS server response. If DNS server doesn't response in this time limit, response the address is unknown or invalid is sent.

Setting options: 1-250
Setting step: 1
Default setting: 50

Firewall

EasyRoute firewall settings.

Setting options:	Maximum
	Minimum
	Typical
Default setting:	Typical

3.2.2.5 System

Password

You can change EasyRoute's password here. Fill in old password and new password. Confirm the password with button Change.

Firmware

Bootloader version

Information about Bootloader version

Bootloader date

Date of Bootloader version

Firmware 0 version

Firmware 0 version

Firmware 0 date

Upload time of firmware 0

Firmware 1 version

Firmware 1 version

Firmware 1 date

Upload time of firmware 1

Search/Procházet

Button for setting the path to the firmware when updating EasyRoute. The ordered number next firmware 0 and firmware 1 is displayed – the last firmware with the highest ordered number is active – EasyRoute runs with this firmware. When You update the EasyRoute with another firmware it replaced the inactive firmware. After restarting the EasyRoute the new firmware will run. The restart has to be done manually.

Update

Button for updating the gateway firmware.

4 Function and usage

4.1 Voice function

Outgoing and incoming call establishing procedures for an analogue telephone are described for illustration. The procedures are the same for the EasyRoute-PBX connection, just remember to program call routing to EasyRoute properly. Check EasyRoute's function by connecting a telephone before.

Suppose that a SIM card has been inserted, the PIN code entered or not required the antenna connected and EasyRoute registered to GSM network – the GSM network LED is permanently on and you can hear the dial tone upon off-hook.

4.1.1 Outgoing Call

1. Hook off the telephone, you can hear the dial tone and the Line LED starts flashing.

2. Dial the required GSM subscriber number. Since EasyRoute receives tone dialling by default, select the DTMF mode. If your telephone transmits pulse dialling only, program EasyRoute to receive pulse dialling. The delay between digits to be dialled may not exceed 5 s (programmable parameter). The number is evaluated as complete and transmitted to the GSM network after this timeout.

3. A short delay follows the last-dialled digit, EasyRoute awaits further dialling. Then, the dialling end is signalled and connection is established.

4. If the called subscriber is available, you can hear the ringing tone. If not, you can hear the busy tone or any of the GSM provider's messages.

5. When the called subscriber answers the call, a call is established. The Line LED is permanently on during the call.

6. Hang up to terminate the call. The Line LED goes off. If the called subscriber is the first to hang up, you can hear the busy tone and hang up.

4.1.2 Incoming Call

1. Ringing signals an incoming call. The Line LED flashes during ringing. If programmed so, EasyRoute transmits the CLIP by FSK between the first and second rings. Advanced telephone sets are able to display the CLI.

2. Hook off the phone to establish the call. The Line LED is permanently on during the call.

3. Hang up to terminate the call. The Line LED goes off. If the called subscriber is the first to hang up, you can hear the busy tone and hang up.

4.1.3 Automatic Call ("Baby Call")

If the Baby Call function is enabled, a pre-programmed period of time is counted down after off-hook. If you do not start dialling within this timeout, EasyRoute signals dialling end and starts establishing a call to the pre-programmed number automatically – from now on EasyRoute behaves as if a standard outgoing call had been established. Any dialling during the Baby Call timeout cancels this function and a standard outgoing call can be made.

4.1.4 Tariff pulses 16 or 12 kHz

EasyRoute has tariff pulse transmitter. You can use tariff pulses for outgoing call pricing. EasyRoute offer pseudo tariff only – tariff metering doesn't correspond to real price of call, tariff pulses are transmitted according to programmed parameters and call duration. You must program specific parameters in call table to set tariff metering for different prefixes of dialled numbers.

You can also program EasyRoute to transmit tariff pulses as call connect/disconnect signalling if your PBX cannot receive telephone line polarity change signalling.

4.2 Ethernet switch and WiFi interface

EasyRoute disposes of 4-ports Fast Ethernet switch and WiFi card. These interfaces allowed PCs or LAN to be connected to EasyRoute. Right network configuration is needed for LAN and internet connection working properly. Use UTP or STP cables at least CAT5 category for connecting devices to EasyRoute Ethernet switch.

4.2.1 Static network configuration

If You are using static configuration of all Your network devices connected to EasyRoute, You can disable EasyRoute's DHCP server function (use web interface – menu Network – DHCP – enable). For properly functioning of LAN and internet connection it is necessary all used addresses belong to same address space as IP address of EasyRoute (that can be set up in menu Networks – LAN). In menu Network DHCP set up the start and end IP

4.2.2 Dynamic network configuration

Network devices can obtain IP addresses dynamically. Enable EasyRoute's DHCP server (Menu Network – DHCP – enable in programming tool) and set up all Your network devices connected to EasyRoute to obtain IP address automatically. Fill in the Start IP and End IP which determine the IP addresses that can be assigned to network devices by EasyRoute DHCP server. For properly functioning of LAN and internet connection it is necessary all used addresses belong to same address space.

4.2.3 Combination of static and dynamic IP address configuration

It is possible to combine dynamic and static IP address configuration. Set up the static IP address for all network devices You want to. For all other network devices set up to obtain IP address automatically. Enable EasyRoute's DHCP server (in programming tool menu Network – DHCP-enable) and fill in the Start and End IP address. Configure EasyRoute's IP address in menu Network LAN. For properly functioning of LAN and internet connection all used IP addresses (both static and dynamic) must be from the same address space and every address can be used only once (only as static or only as dynamic address).

4.2.4 WiFi interface

EasyRoute's WiFi card supports 802.11a/b/g standards; maximum speed is 54Mbit/s. The WiFi card configuration is possible in menu Wireless. You can set security parameters and protection of the WiFi network.

4.3 SIM Card PIN protection

4.3.1 PIN Entering by web interface

Like other parameters, the PIN code can be entered using a EasyRoute's web interface. If You set EasyRoute to remember the PIN, it will be entered automatically upon next EasyRoute power up.

4.3.2 Automatic PIN Entering

You don't need to enter the PIN upon power up if it is stored in EasyRoute – it is entered automatically. This function is convenient in case of power failure; EasyRoute is operable in a short time after power recovery without any intervention by the operating staff.

Caution! One PIN entering option is exhausted by the attempt to enter the PIN automatically upon SIM card or PIN change. If wrong, the automatically entered PIN is cleared from the internal memory to avoid another false attempt upon next power on. There are still two manual PIN-entering attempts after such unsuccessful automatic entering. To prevent the unsuccessful automatic PIN entering, delete or program properly the EasyRoute PIN using the web interface in the case of SIM card change.

5 Technical Parameters

GSM:

GSM module, GSM bandwidth	MC8775v 850/1900/2100MHz UMTS WCDMA/HSDPA 850/900MHz GSM/GPRS/EDGE 1800/1900 MHz GSM/GPRS/EDGE
Maximal transmission power	2 W EGSM 850 / 900 MHz, 1W GSM 1800 / 1900 MHz 0,25W UMTS 850/1900/2100 MHz
Receiver sensitivity	-110,5 dBm UMTS 2100/1900 MHz -111,5 dBm UMTS 850MHz -107,5 dBm GSM 850/900 MHz -106,5 dBm GSM 1800/1900 MHz
Audio	HR+FR+EFR Half rate+Full rate+Enhanced full rate Echo cancelation, Echo suppression, WDCMA AMR Adaptive Multirate
DATA	GPRS/EDGE Class B, max 5 slots total, multislot class 12 CSD max. 14,4 kb/s; Coding scheme CS 1-4, MCS 1-9 WCDMA/HSDPA kategorie 8, MS Class A (Simultaneous Voice and Data), downlink max.7.2Mbps, uplink max.384kbps
Antenna	850/ 900/ 1800/ 1900 MHz 50 Ω SMA antenna connector
SIM card	3V/1,8V plug-in

Power Supply:

Mains supply	100-240V/12V; 2A adapter
DC power supply	10 to 16V DC
12V consumption	Standby 350mA Voice call 450mA Data connection 400mA Voice and data 500mA
Supply connector	DC Jack 2.1mm

PHONE INTERFACE:

Interface type	2-wire analog, FXS
Telephone connector type	RJ 12, 6/2
Call impedance	Adjustable worldwide, default 600 Ω
Loop voltage	48 V DC
Loop current	Max. 20 mA
Tone frequency	Adjustable, default 425 Hz
Dialing type	Tone (DTMF) and pulse
Ringing voltage	42 Vrms 10-60 Hz
Calling line identification	CLI during ringing according to ETSI FSK
Tariff pulses	f=16/12 kHz
Answer supervision	12/16 kHz pulses

Ethernet switch :

Interface	4-Ports Fast Ethernet switch 100Mbps
Conector	RJ-45

WIFI:

Band	2,5/5GHz
Standard	802.11a/b/g

OTHERS:

Dimensions (w/o connectors)	170 x 130 x 45 mm
Operating temperature	0°C to 45°C
Operating status signaling	3 LEDs (on, network and WIFI status, line)

6 Additional information

6.1 Troubleshooting

No LED is on after power up

- Check the power supply.

EasyRoute does not register to GSM

- Check the SIM card.
- Check the PIN.
- Check the antenna connection.
- Select a place with a good GSM signal.

No tone can be heard after line off-hook

- Check the telephone line connection.
- EasyRoute is not initialized properly upon start (approx. 10s after power up).
- EasyRoute is not supplied with power.

EasyRoute keeps transmitting a tone during dialing, not receiving the dialing

- Select the correct dialing type (DTMF or pulse).

EasyRoute does not communicate with PC

- Check the Ethernet cable connection.

6.2 List of Abbreviations

- **APN** - Access Point Name – necessary for the GPRS service
- **CLIP** - Calling Line Identification Presentation
- **CSD** - Circuit Switched Data
- **COM** - PC serial port
- **DTMF** - Dual Tone Multifrequency - tone dialing
- **ER** - EasyRoute
- **FSK** - Frequency Shift Keying
- **FXO** - an interface electrically identical with a standard telephone (opposite side = FXS interface)
- **FXS** - a telephone interface allowing standard telephone connection (opposite side = FXO interface)
- **FW** - Firmware - similar to SW, a term for the central microprocessor program
- **GSM** - Group Switched Mobile system - the present standard digital mobile telephone network
- **GPRS** - General Packet Radio Service - high-speed data transmission for GSM networks
- **HW** - Hardware - an electronic device, circuit, board, component, etc. in this context

- **P(A)BX** - Private (Automatic) Branch Exchange
- **PC** - Personal Computer (based on the IBM PC standard)
- **PIN** - Personal Identification Number - a SIM card securing password
- **PUK** - Personal Unblocking Key - a password used to unblock a blocked SIM card after repeated wrong PIN entering
- **RS-232C** - a PC serial port standard
- **SIM** - Subscriber Identity Module - a chip-equipped module to be inserted in a GSM device for identification
- **SMS** - Short Message Service, a term for the system and one unit (message)
- **SW** - Software
- **TTL** - Transistor-Transistor Logic - a standard digital technology defining voltage for levels 0 and 1
- **PSTN** - Public Switched Telephone Network